

Seeking more value from IoT

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3rd Annual Bridge Alliance CXO Forum

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STL PARTNERS

Agenda

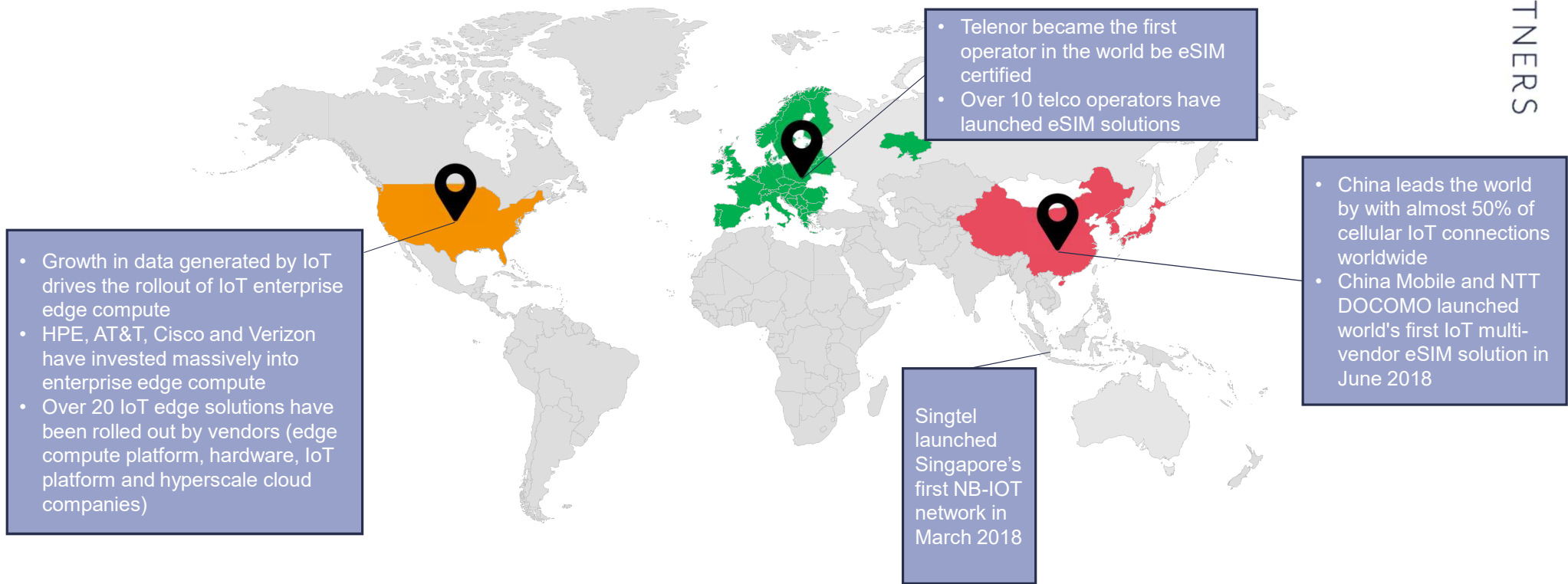
- 1 IoT update and overview**
- 2 2017 CXO Forum - Recap**
- 3 Asset management overview and case studies**
- 4 Lessons and opportunities for operators**

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Key Recent IoT Milestones

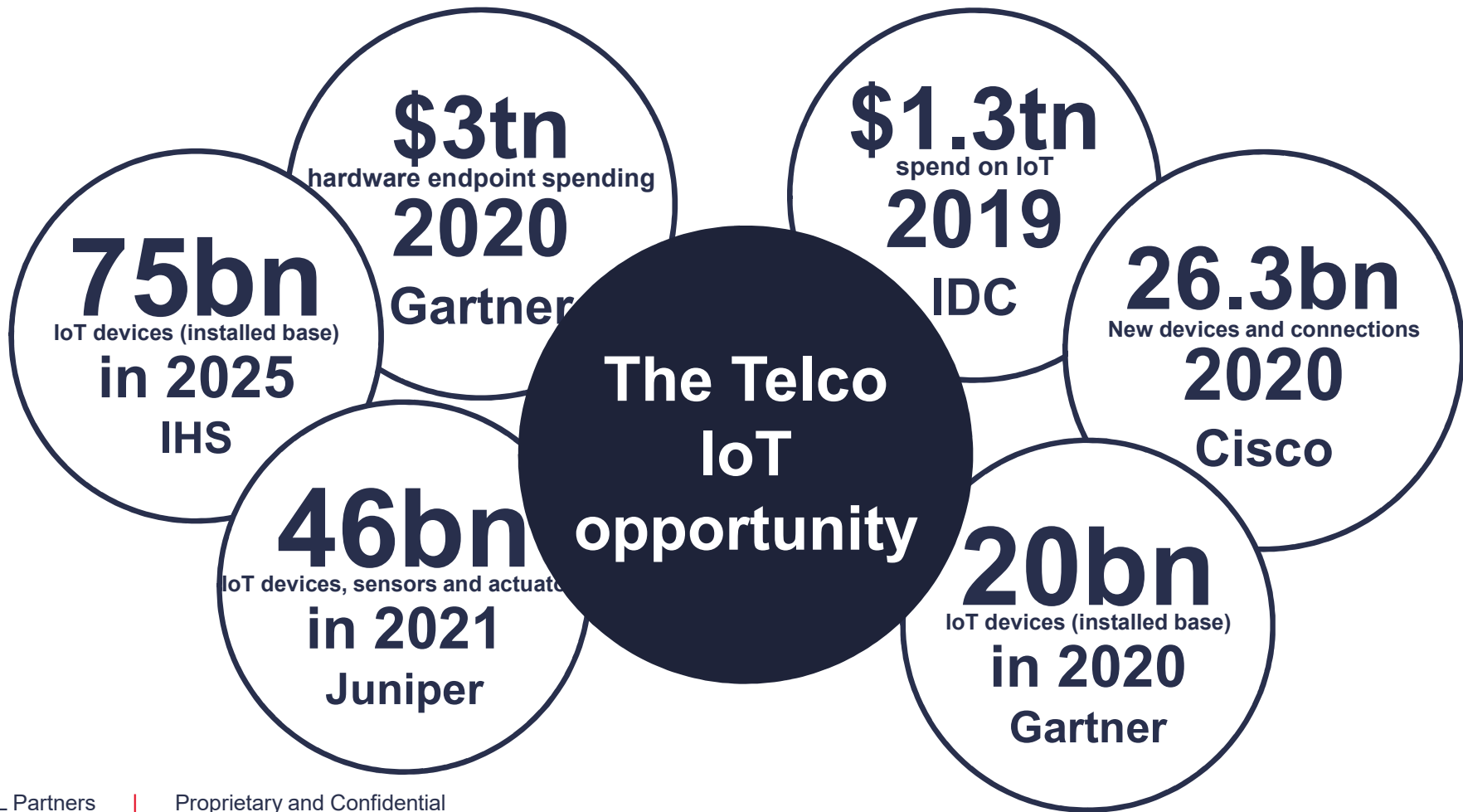
Global cellular connections passed half a billion



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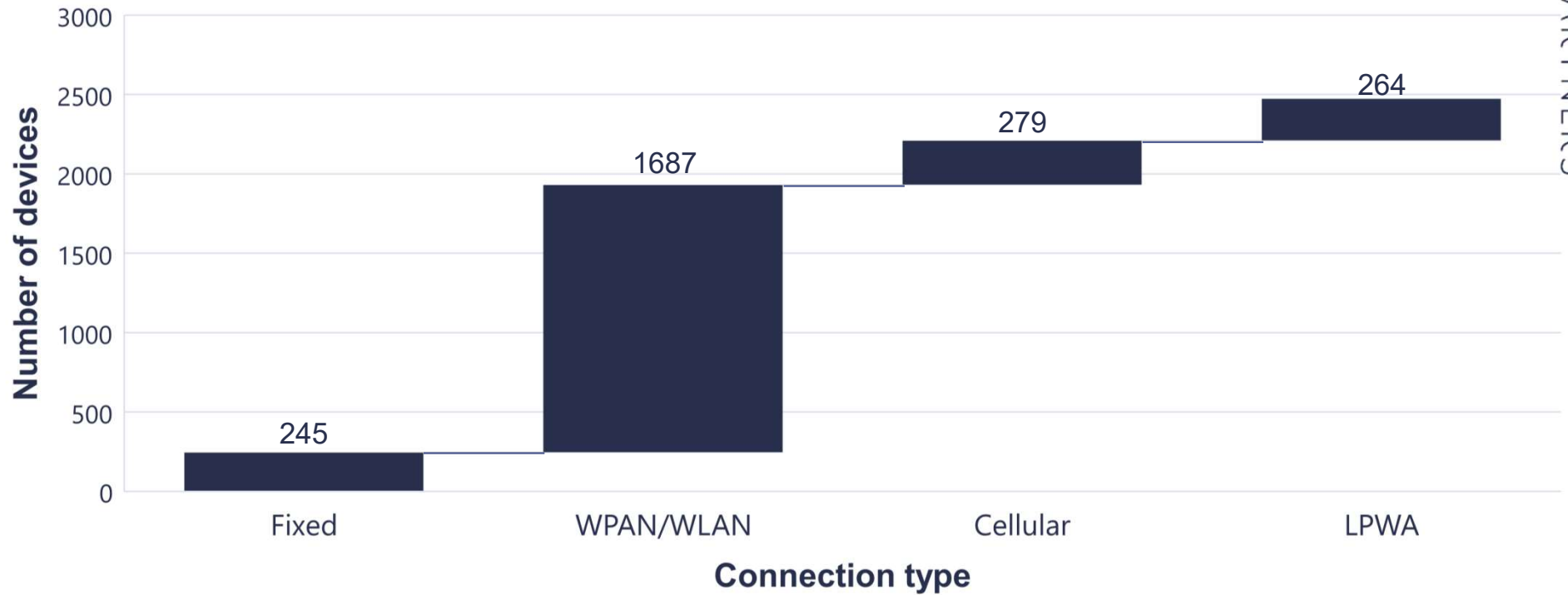
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The Internet of Things is forecast to connect billions of devices and deliver trillions of dollars in revenues



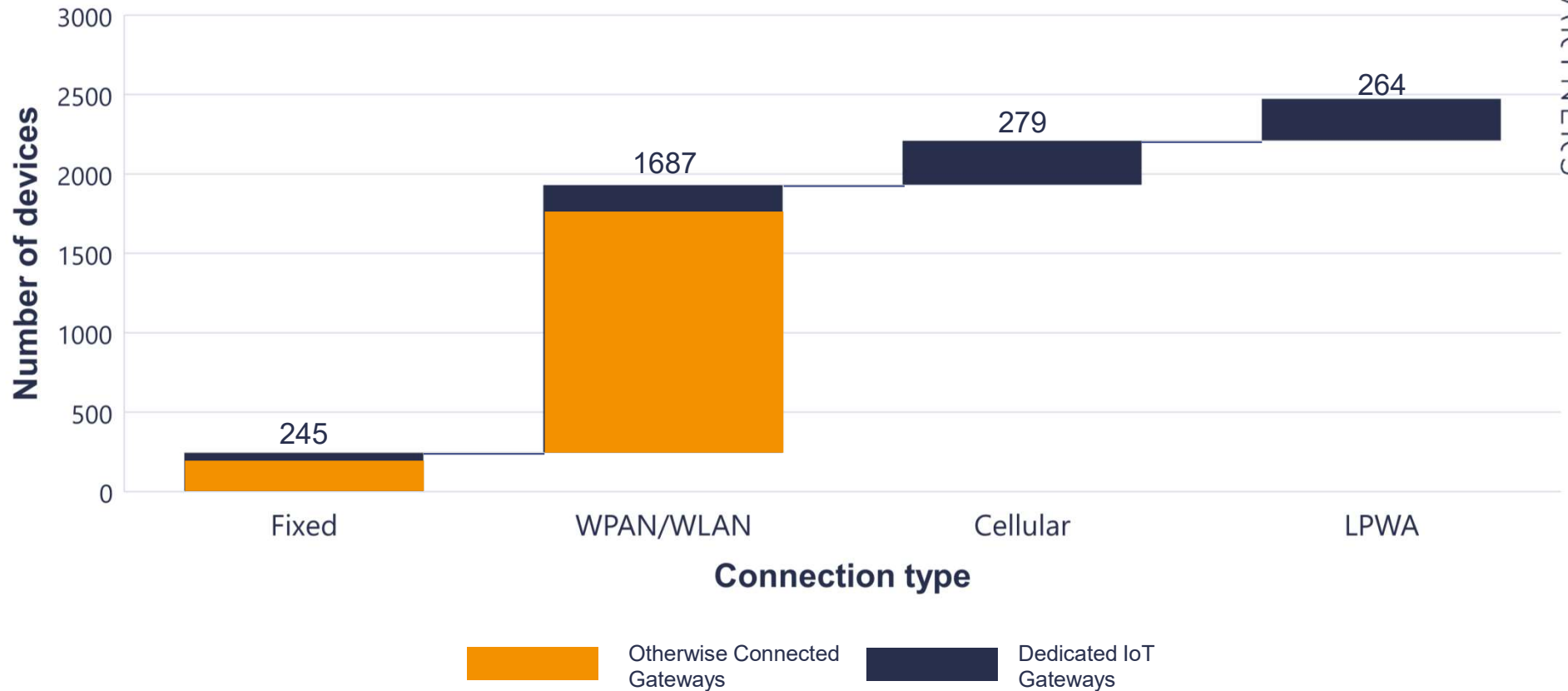
Assuming close to 2.5 billion connected devices in Asia-Pacific by 2020, STL Partners projects that the breakdown of devices by connection type could be as follows:

Estimated Number of Devices By Connection Type in Asia-Pacific (Mn, 2020)



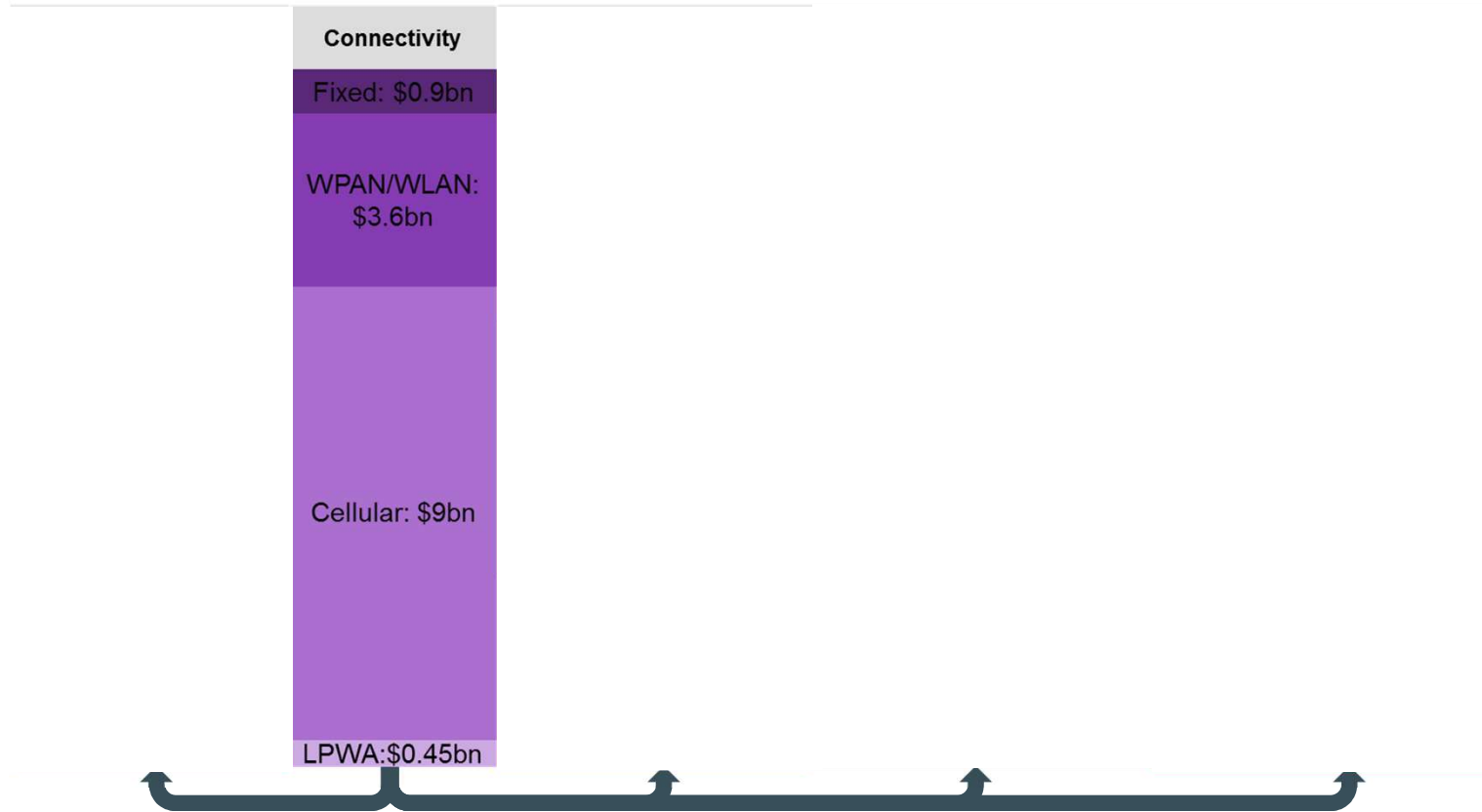
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To capture the entire IoT opportunity, telcos need to move beyond connectivity into other areas of the ecosystem

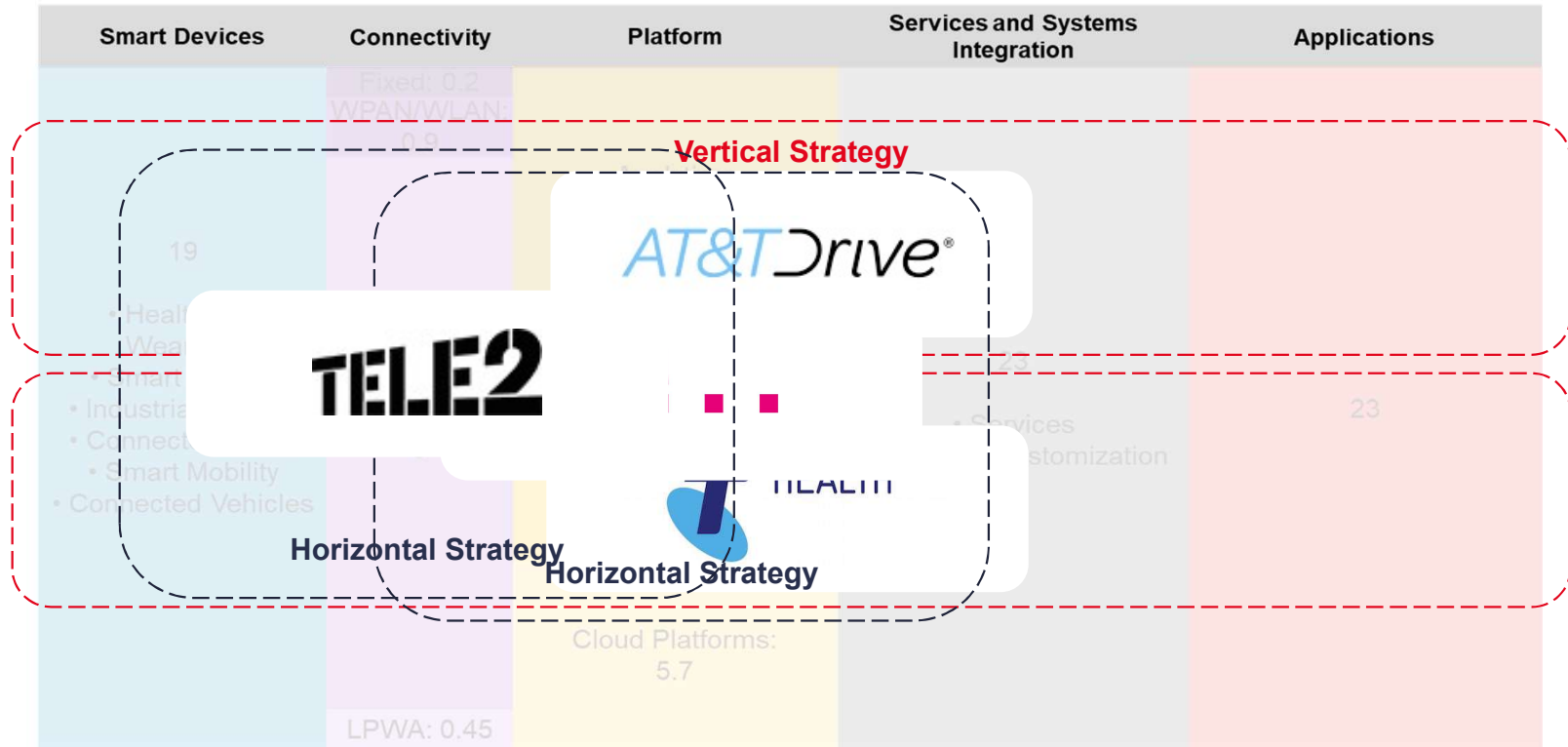
IoT Revenue Estimates for Asia-Pacific in 2020 (Billion USD)



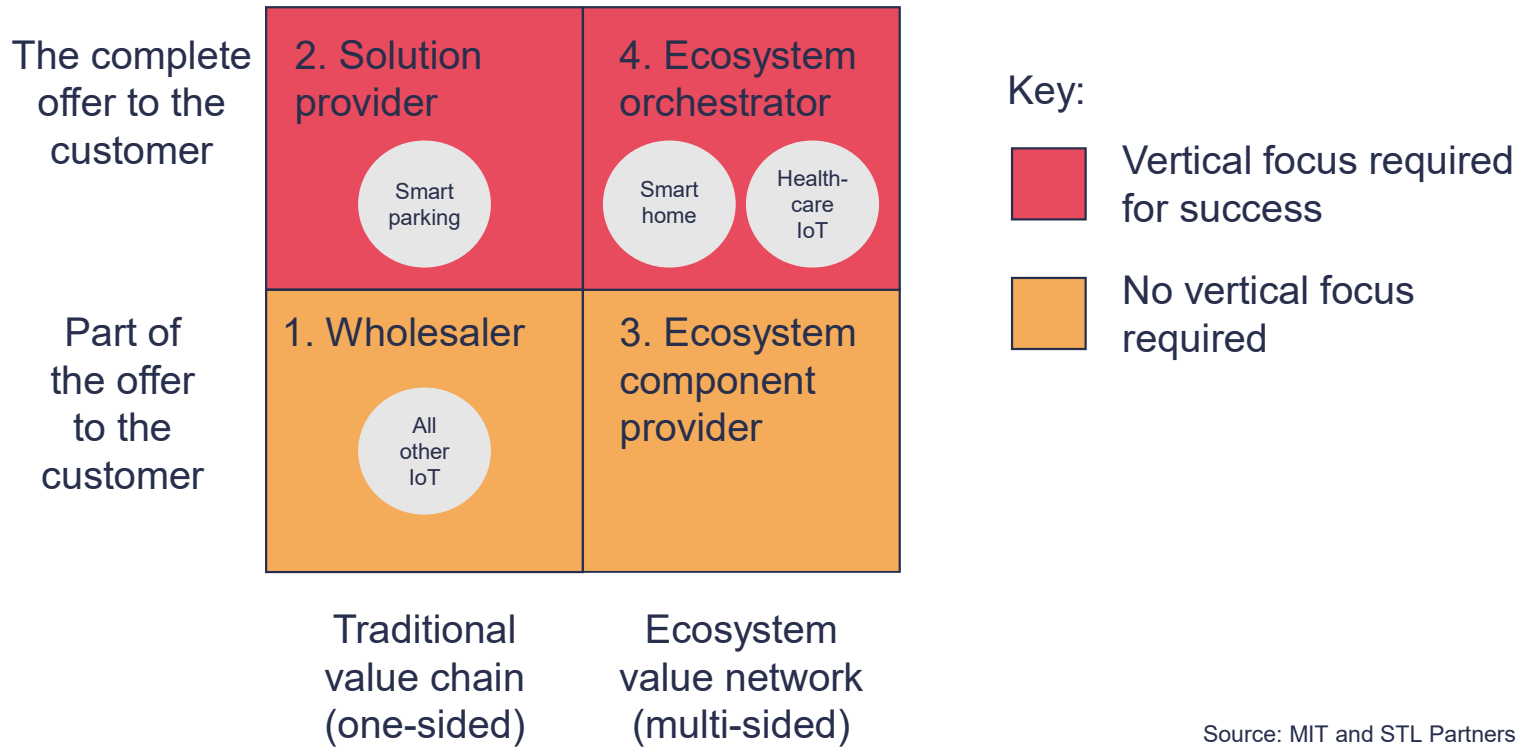
Telcos need to explore the entire IoT ecosystem!

What are telcos' strategic options to go beyond connectivity?

IoT Revenue Estimates for Asia-Pacific in 2020 (Billion USD)

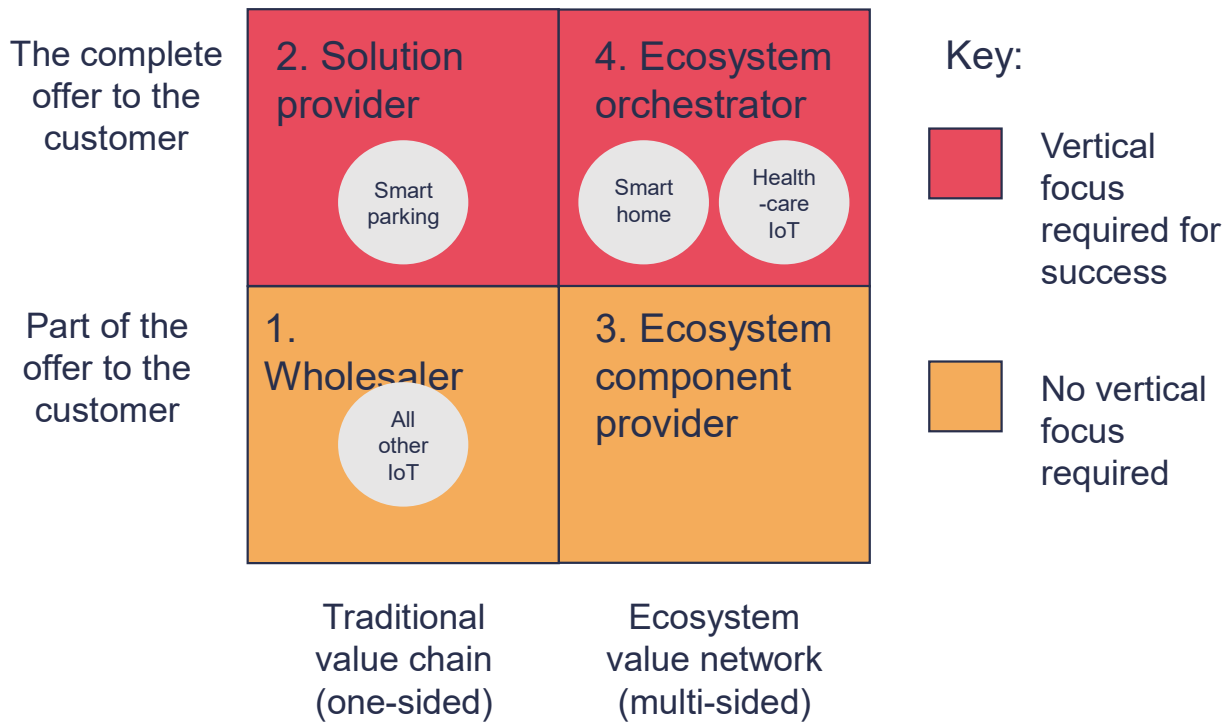


Four possible telco roles in the IoT ecosystem, which aren't mutually exclusive



Source: MIT and STL Partners

So which roles and verticals should you focus on?



- Three key questions:
1. Does this vertical have high value potential?
 2. Do we currently have capabilities in this vertical?
 3. If not, do we have the appetite to develop them?

Source: MIT and STL Partners

Last year's panel identified asset tracking & management as one of the most promising IoT verticals...

Asset management is:

- **Relatively horizontal**
- **In demand**
- **Proven**
- **Easily understood**



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3 Asset management overview and case studies

3.1 AT&T

3.2 China Telecom

4 Lessons and opportunities for operators

Asset management is not new but is changing radically...

- **Asset management** (used interchangeably with **asset tracking**) is the method and process used to track physical assets' **location, status, maintenance schedule** and **performance**
- Assets have been tracked (manually) for a long time and data generated remains largely one-way data



- While asset tracking becomes **more connected**, the definition of “**an asset**” is changing, and the **number of parties** with an interest in tracking the asset directly is **increasing**

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Enterprise asset management – AT&T perspective

Asset management

Operations platform

Tracking, monitoring and management of any connected asset (from different vendors) from a centralised user interface

Containers & trailers

- Devices for long-term remote use, collecting data and sending it to the cloud for viewing
- Provides alerts and notifications

Storage tanks

- Tank level measurements sent wirelessly
- Aimed at distributors to help improve efficiency and reduce delivery costs

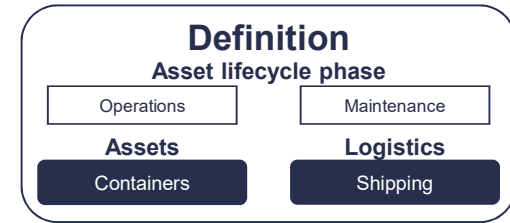
Equipment & machinery

- Monitor and control mixed fleet of equipment (construction, agricultural and manufacturing equipment)

Slap & track

- Track and monitor wide variety of assets such as tools, boxes, equipment or inventory

AT&T – Maersk partnership



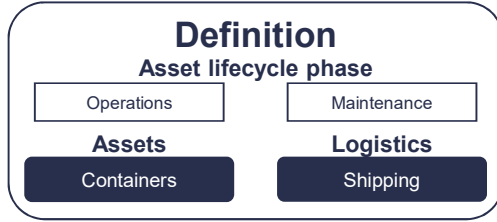
AT&T – Maersk partnership

? **Problem**

- Maersk’s refrigerated containers can **malfunction** at times
- These could only be noticed during **full service inspections** before reuse or by **visual inspection** during transit
- Perishable goods being transported are lost if malfunctions are not found
- This reduces customer satisfaction and **increases insurance premiums**

💡 **Solution**

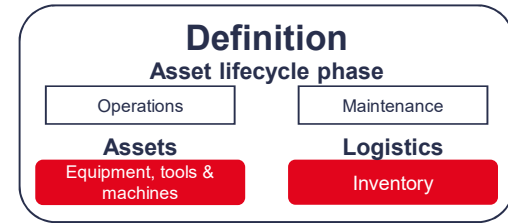
- In 2015, Maersk partnered with AT&T to monitor and track **~300,000** of its refrigerated containers
- Each container uses a remote container device (RCD)
 - SIM card
 - GPS unit
 - ZigBee radio and antenna
 - Optional input for analogue sensors
 - Multiple interfaces to connect into the container’s controller
- Sensors track air supply, temperature and humidity
- RCD operates with two-way connectivity



🔍 **Outcome**

- Maersk has near-real-time **visibility** into containers’ condition
- Shipping supervisors can **monitor performance** remotely to help ensure containers are in working condition
- During first **two months** of operation, the system caught and corrected **150 cases** of temperature failures

AT&T – Red Bull partnership



AT&T

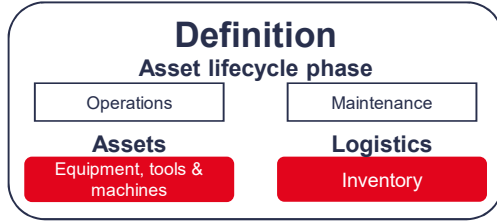
AT&T – Red Bull partnership

? **Problem**

- Red Bull drink coolers require regular **restocking** and can develop **maintenance** issues
- Workers need to check the status of coolers **manually**, potentially adding up to significant effort and fuel expended
- Coolers can also be subject to **theft** or damage unrelated to maintenance

💡 **Solution**

- In **2017**, Red Bull approached the **AT&T IoT Foundry**
- Solution created is a mounted IoT device approximately the size of an iPhone and was retro-fitted to **~1,000,000** Red Bull coolers
- The device provides data on **performance, door activity, temperature** and **geo-location**
- The device collects this data and sends it at regular intervals using the embedded AT&T Global SIM to The AT&T Control Centre and AT&T IoT Platform to be processed
- Location data provided by **Wi-Fi “sniffer”**



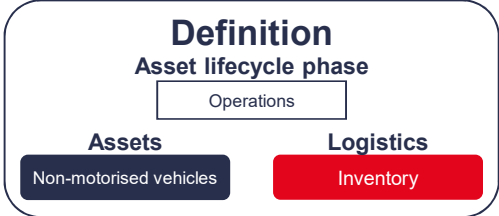
🔍 **Outcome**

- Red Bull operators can access the temperature and performance data remotely, no longer requiring manual checks
- Data has enabled **predictive maintenance**

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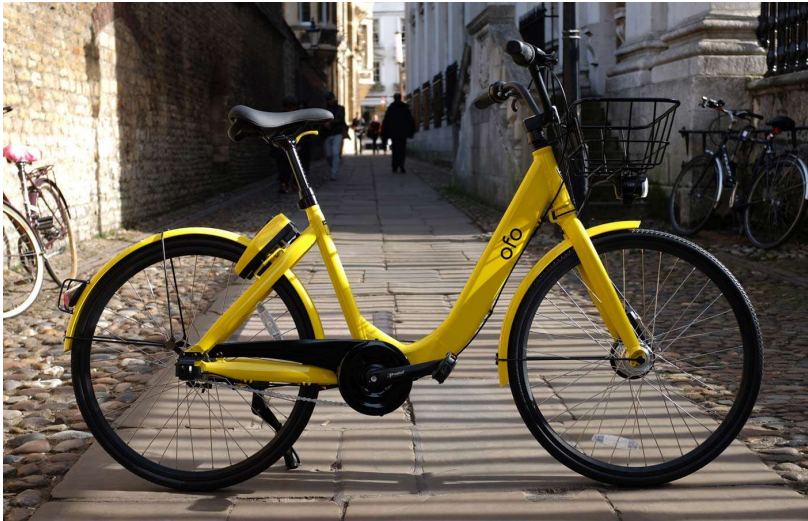
China Telecom – ofo partnership



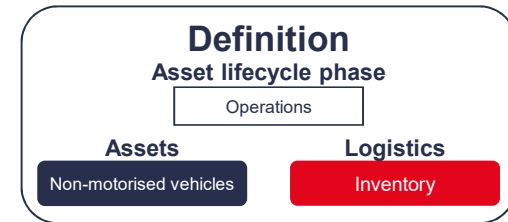
? Problem

💡 Solution

🔍 Outcome



China Telecom – ofo partnership



Problem

- ofo needed to provide accurate location data for its bicycles so users could locate them
- Previously used a **2G GPRS modem** mounted on the bikes to unlock them via a user's app request
- Limitations of the technology included:
 - **Battery life**
 - **Response time**
 - **Lack of coverage** – making it harder to locate the bikes and at times impossible to open the lock

Solution

- In **2017**, ofo partnered with China Telecom and Huawei to implement NB-IoT in their dockless hire bikes
- **China Telecom** are providing the **NB-IoT network** and **Huawei** are providing the **NB-IoT chips and platform**
- The solution was retro-fitted to **~10,000,000 dockless bikes**

Outcome

- **Coverage:** Improved coverage
- **Scalability:** NB-IoT scales to connect millions of bikes and offer enough bandwidth to operate each bike
- **Tracking:** gather data on movement patterns, prevent theft
- Battery life greatly increased and reduced time to unlock the bike

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In a rapidly evolving market, operators need to take multi-channel approach to asset management solutions

1 Create the “SI” capabilities to be invited to the big “solution” RFPs and to win them



2 Build a developer-centric “foundry” approach to help kickstart conversations with local companies



3 Create a distinct team & identity on top of that of the operator



4 Create a mechanism to identify and target clients for whom regional capabilities will be important



5 Build strong partnerships (hardware and platforms) to support all of the above



Vote 1: Assuming that you pursue asset tracking, what should your operators' focus be?

1. Systems Integrator "solutions" approach
2. "Foundry" approach
3. Create a distinct team and identity
4. Create a mechanism to address regional capabilities
5. Form hardware and platform partnerships

Vote2: What should the Bridge Alliance's role be?

1. Single point of contact for regional RFPs (as for EM)
2. Build a solution “factory” for Bridge Alliance members
3. Create a distinct team (GTM & delivery) with for regional AM opportunities
4. Create a distinct team (GTM & delivery) with for all asset opportunities
5. Facilitate regional partnerships
6. Other

Thank you

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